A History of the Water Conditions in Cummingston Park

Bob Muller

Royal Oak's Cummingston Park in the 1950s and early 1960s had a tremendous diversity and quantity of wildflowers. This is the reason this property was protected by the City of Royal Oak as a nature park. A flyer published by the city in 1965 of Cummingston Park, included a short history, flora list and map of the trails. The flyer stated that Ray Safranoff, a botany student at Michigan State University, discovered and plotted the area in 1954 (A Treasury of Wild Flowers). In an interview with Ray Safranoff, he corrected several inaccuracies; he went to Albion College for his teaching degree and was not a botany student. Mr. Safranoff also, would not take credit for the discovery of the park; he stated that he, Art Beimel and Joe Fisher, all Royal Oak teachers, had a competition as too who had the best wildflower garden. They were looking through all of the woods around Royal Oak for wildflowers to add to their gardens and that's how they discovered Cummigston. In 1959, Mr. Safranoff talked to the Women's Farm and Garden Club regarding the Cummingston park area. They thought Cummingston would be a good project for their group (Safranoff). "The Women's Farm and Garden Club organized the cleaning and trail building in the park," according to Walter Muller, who helped with removing the heavier items from the park on the first clean up (Muller). Joan Larson, a resident on Elmhurst since 1963, told me that Boy Scouts identified wildflowers and placed signs and the Girl Scouts also helped in cleaning the park (Larson). Royal Oak, at this time, was a community on the northern edge of the suburbs. As the north end of the city developed around the park, historic drainage patterns were altered. These changes have had a tremendous negative impact on the park's plant life. The following is a history of the area and documentation of the changes:

Knowledge of the geography and geology of this area is necessary to understand the original conditions before development. The entire city of Royal Oak lies within the lake bottoms of the post-glacial lakes that were the predecessors of Lake Erie. As the glacier retreated 14,000 years ago, Lake Maumee, the first of these post-glacial lakes, covered all of Royal Oak. A series of lakes occurred until about 2,600 years ago, when modern Lake Erie came into existence (Hansen). Four of these lakes left beach ridges slowly dropping the elevation of the city of Royal Oak as you move from the northwest to the southeast corners of the city (Bingham). The elevation of Woodward Ave. at Fourteen Mile Rd. is about 740 feet. By the time you reach I-75 and Ten Mile Rd., it has dropped to 640 feet (Birmingham quadrangle & Royal Oak quadrangle). At each of these four beach ridges, the land slightly rises and then dips. The beach ridges themselves, were dry ground, with the area between them generally wet. Red Run, the small river that used to run through the city, had its main channel basically running to the east. It managed to cross these beach ridges at low spots. All of the tributaries of Red Run tended to run north and south between these ridges. The original Indian trails followed many of these ridges; this is why Rochester road runs at an angle to the normal grid pattern of our roads. Down town Royal Oak, which was one

days travel from Detroit, along Woodward Ave., was built to the east of Woodward where the high ground of Lake Wayne's beach ridge is. These geological features have impacted the layout of our City. Two of these post-glacial lakes are important to Cummingston Park. Lake Whittlesey's beach ridge (formed 13,000 years ago) crosses 14-Mile road and runs through Clover Hill Cemetery and Coolidge Road at the old cemetery just north of Meijers. The next beach ridge to the east, Lake Arkona (formed 13,600 years ago), is a low rise dividing the north area from the south area of Cummingston Park (Bingham). Cummingston's historic drainage appears to be, for the south half, the North Branch of Red Run (Parmeter Drive today) and the north half, Spencer drain, a tributary of Big Beaver creek. The survey map of Troy Township, from 1916, shows a drain where Parmeter Drive is today, and another drain coming very close to Cummingston Parks northeast corner (see Figure 1) (1916 Troy Township Tax Parcel Ownership Map).

The city of Royal Oak lies within Royal Oak and Troy townships. The survey map of Troy Township, from 1872, shows six springs and a pool within a half-mile of Cummingston Park (see Figure 2). Five of these are on the down slope of the Whittlesey beach ridge and two on the down slope of Arkona beach ridge. This shows that historically, the Cummingston Park area had an unusual amount of ground water. The only other spring occurring in Royal Oak on these 1872 maps, is on the east side of the Warren beach ridge as it crosses Woodward Ave at Webster (Atlas of Oakland County, Mich.). Soil surveys show the soil of Cummingston Park to be mostly Blount loam. This is a soil type that is somewhat poorly drained, meaning "water is removed slowly enough that the soil is wet for significant periods during the growing season." In Blount soil, "the available water capacity is high" and "Runoff is slow." "The seasonal water table is at a depth of 1 – 2 feet from January through May." A water table is a line below which the unblocked pores in the soil are filled with water; it can be below or above the surface. A small area of Cummingston has a soil type of Lenawee, silty clay loam; this is a nearly level, poorly drained soil. It is subject to frequent ponding. Ponding, is "standing water on soils in closed depressions. The water can be removed only by percolation or evapotranspiration." In Lenawee soil, "permeability is moderately slow, the available water capacity is high and runoff is slow." "High water is at or above the surface, +1 to –1 foot from November to May (Soil Survey of Oakland County, Michigan). I believe that the Lenawee soil is what we have at the north end of Leafdale Trail, as it is the wettest area of the park and the soil horizon we have seen there, matches the description in the soil survey. Between the information on soil type, in the soil survey, the 1872 land survey mapping of springs and personal observations, it seems that the Cummingston Park area was and is the wettest area in Royal Oak.

Two of the discoverers of the park, Ray Safranoff and Art Beimel, were teachers at Whittier Elementary School in the 1950s when I was a student there. We were taken on several field trips to Cummingston Park. At the time, the idea of catching crawfish and pollywogs was more fun than looking at wild flowers, so the water condition was of prime importance to me. I personally remember the

area during the spring, wild flower season, as wet mushy ground, with many small “puddles.” Mr. Safranoff stated that “the flooding started with the building of houses blocking drainage to the east, and Meijer Drive stopped the water movement to the north.” Mr. Safranoff’s comment on the pre-development condition of water in the park was “some ponds and pools, nothing like today” (Safranoff). Daniel McMahon, who grew up on Marais, in Clawson, near Tenhave and Elmhurst, near Cummingston, played in both parks as a boy. Dan stated that Tenhave had a large swamp, but Cummingston had no area like that. He said that Cummingston was very wet in the spring, but had no large areas of standing water, just pools filling the many small depressions (Mahon). Joan Larson remembers Cummingston before the Mansfield Manor apartments were built in 1965. The apartments were the beginning of the major developments south of the park. Joan stated that “the park was wet, not flooded in spring and then dried out in the late spring”, and that “Meijer Drive finished off the park with major flooding” (Larson). Don Drife, remembers a family photo taken in the late 1950s, of his mother holding him as a baby, under the entrance sign of Cummingston Park. He has spent a considerable amount of time in Cummingston over the years. Don concurs with the other descriptions of very wet soil with the small depressions filed with water (Drife). The only high ground in the park is the meadow area and this is obviously a bulldozed hill of construction waste. A sizable quantity of broken brick, concert and other construction waste, litters the ground on this hill. More than likely, this happened during the massive construction across Torquay in the early 1960s.

Two large areas generally flood in the park. The first water appears at the north end of Leafdale Trail, expands east and west and then, as the water level rises, moves toward the front of the park. More flooding occurs on the east side of Leafdale Trail than on its west side. At the highest water levels, this floods to within 50 feet of the main entrance. At this level the area of the Arkona beach to the east of the Leafdale Trail is almost submerged. At the water’s highest level, flooding also occurs in the southwest part of the park and may spread along the south fence to within 100 feet of the Leafdale entrance. West of the abandoned trail, where the chained gate is on Torquay Ave., there is also a ditch running on a north-south line and may easily be over 12 inches deep at these times. It is not known when this ditch was dug. The northwest corner is the park’s highest natural elevation at 707 feet above sea level. There is never surface water here. The northeast corner of the park is the lowest elevation at 702 (Topo of Cummingston Park). Although this is the lowest part of the park, and the soil is saturated here, there is never large flooding; the original drainage in this area seems to still be working.

By the late 1960s, the North branch of Red Run (Parmeter Drain) was already buried as a storm and sanitary drain (McMahon). In the early 1970s, when I was involved in a city sponsored nature program, Torquay Ave was in place. Torquay Ave. blocked the natural drainage to the south. This can still be seen. In the spring, water seeps through the expansion joints in the curb and through

the curb cut, just east of the main entrance. The soil between the south fence and Torquay is super saturated in the spring, often with water flowing over it. This piece of land is at a higher elevation than the standing water inside the fence to the west of Leafdale. Sometime before 1970, a storm drain was added just inside the park entrance, on the west side of Leafdale Trail. This has some effect, but only at the highest water levels is water able to reach this drain. In the late 1970s, Meijer Drive was built. This is a bermed road, effectively an earthen dam, on the north edge of the park. The north boundary of the park in the 1970s had a small cattail marsh. Cattails prefer slightly flowing water and do not do well in totally stagnant water. Meijer drive stopped the flow of water north, resulting in the loss of the cattails in the park. Just to the north of Meijer drive, the cattails still exist, as the water still moves to the north in its natural drainage path. When Meijer Diver was built, no drainage consideration for the park was included. As best can be told by observations in the park, the Arkona beach prevents water to the north from moving easily to the storm drain on the south side. Both Torquay and Meijer Drive are effectively dams. The soils of Cummingston Park are subject to poor drainage, but historically at high water table times of the year, surface water was able to drain away. Now with these drain paths blocked, flooding of up to a foot deep can cover about one third of the park.

The effects of this flooding and the saturated soil conditions have had a tremendous negative effect on the flora of Cummingston Park. The citizens of Royal Oak have lost their premier wildflower park. The flooded areas are easy to see in the dry season, as there are no herbaceous plant on the forest floor, only dry leaves and twigs. An example of the loss can be illustrated by an entry in Don Drife's high school log of his botanizing in Cummingston. Don recorded 3500 blooming red trilliums and in his log stated they seemed to be in decline. An extensive flora survey was made from 1972 through 1976, in 1999 when we started to bring this floral survey up to date. Don was able to find less than 50 red trilliums (Drife). In the 1970's, the flooding was there, but we had not lost the wildflowers yet. My personal photo collection taken in the early 1970's shows many wildflowers. Many kinds can no longer be found in the park and those that can, you generally can count their numbers on your fingers. I did not visit the park from the early 1980's until 1999 when we started the Royal Oak Nature Society. The lack of any wildflowers was immediately noticed. This was one of Southeastern Michigan's best wild flower areas, yet today all of the Royal Oak Nature Society's spring wildflower walks occur in Tenhave Woods due to the lack of wildflowers in Cummingston Park. Less noticeable because the park is still covered by a forest, is the loss of trees species. American beech trees prefer damp rich soil that is drained, but will grow to the edge of hard wood swamps. We had American Beech basically throughout the park. Today they only exist along the Arkona beach ridge, which is only about a foot higher than the rest of the park. Even here, they are barely holding on, many are still drying and can easily be seen near the Leafdale Trail. Most of the flooded areas of the park now have only silver and red maples as well as small elms. These are the only trees

that can handle the extreme flooding. Thirty-nine different species of tree are found in Cummingston Park. The fact that we only have two closely related species in the flooded areas illustrates the unbelievable loss of bio-diversity within Cummingston Park.

Cummingston's standing water tends to dry sometime between the end of June and the end of July, depending on the water conditions in a given year. Knowing that the park really isn't dry, but the water table has simply dropped below the surface, we started a research program last summer to record the water table during the year. On August 22, 2004 we used a posthole digger to sink a hole approximately 36 inches deep in the wettest part of the park. The hole immediately filled to 27 inches below grade. From September 29 through October 30 the hole was dry, this is due to the water table dropping below our 36-inch deep test hole. November 13 the water was back and 28 inches below grade. On December 11, 2004 the water was measured three inches above the surface and by January 2 was 11 inches deep. Ice prevented us from taking measurements after January 2. With the ice gone on April 2, we were able to measure again and found the water at 12 inches above the surface (Table 1). At 12 inches deep, the water was finding its way to the sewer from three directions. The water in the southwest of the park formed a three-inch wide trickle, which flowed east to the sewer. There was a small flow of water flowing through the "ditch" on the west side of Leafdale Trail from the north. Leafdale Trail is a boulevard trail, with a culvert under the west side of the trail, the boulevard was flooded and there was a small 4" wide 3" deep ditch someone dug across the east side of the trail. Water was also flowing through this ditch and boulevard by way of the culvert to the sewer. One week later the water at the test hole was at eleven inches deep and no water was flowing to the sewer. We have found that as soon as the water levels drop below the Arkona beach the water south of Arkona beach dries out. Further monitoring this spring showed that when the water was 7" deep at the test hole the major flooded areas of the park had the water table at just below grade.

April 9, 2005 Don Drife and I measured the water levels in the two flooded areas to the level of the sewer. We also measured the water level to the west of Leafdale and just inside the south fence to the surface of Torquay Ave. In close observation of the water levels in Cummingston over the years, Don and I both felt that the water was often at a higher elevation than both the sewer and Torquay Ave. The measurement found that the water to the east of Leafdale and north of the Arkona beach was at a different elevation than the flooded area in the southwest corner. More than likely, the Arkona beach and Leafdale Trail are forming an impervious barrier to the water. The water at the front of the park to the east of Leafdale Trail was 10.5" higher than the sewer to the west of the trail. The flooded area to the southwest was 5.25" higher than the sewer, as well as 6.75" above the street level of Torquay Ave. This was at a time when the water above the test hole was 11". It would be valuable to get a professional survey to confirm this.

The conclusions I have come to, reviewing the historical data, the soil maps, observations from the last five years, our water table and survey data, is that the high water table in the park is a result of the blockage of historic drain paths. Therefore we believe that if we can provide a drain path to the sewer from the north side of the park to keep the water at the 7" level at the test hole, we will stop the major flooding of Cummingston Park. We believe ditches can be used to drop the water levels in the Park. This should restore the park to its historic condition of many low depression filled with water in the spring, but not large areas flooded. If we can accomplish this, the park can start to heal its self. Those few wild flowers holding on in hidden corners of Cummingston can begin to reclaim the land.

Table 1

Water Table Chart for Cummingston Park
August 2004 through July 2005

Date:	Water Level	Depth of Hole
Aug. 22	-27 Inches	36 Inches
Sept. 8	-20	"
Sept. 15	-24	"
Sept. 23	-29	"
Sept. 29	Dry	"
Oct. 4	Dry	"
Oct. 15	Dry	"
Oct. 25	Dry	"
Oct. 30	Dry	"
Nov. 13	-28	"
Nov. 22	-26	"
Nov. 26	-14	"
Dec. 4	-3	"
Dec. 11	+8	"
Dec. 18	+7	"
Jan. 2	+11	"
April 2	+12	"
April 9	+11	"
April 16	+6	"
May 8	+9	"
May 14	+10	"
May 21	+7	"
May 29	+4	"
June 16	-16	"
July 18	-36	43 Inches
July 23	-39	"
July 30	-34	"

Figure 1

Section of 1916 Troy Township map Showing drains.

Crosshatched area is site of Cummingston Park

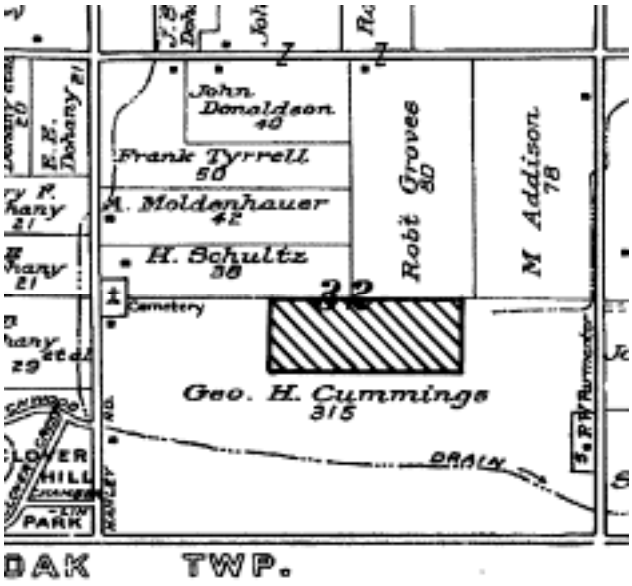
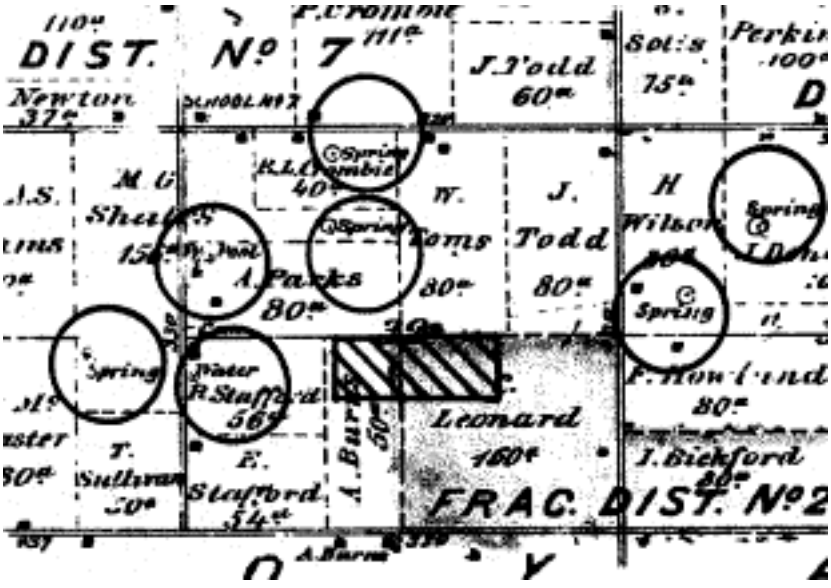


Figure 2

Section of 1872 Troy Township map, circles are where springs or pools occurred

Crosshatched area is site of Cummingston Park.



Works Sited:

Atlas of Oakland County, Mich. 1872: (Royal Oak Public Library).

Bingham, Marjorie T. Flora of Oakland County Michigan Cranbrook Institute of Science Bulletin No. 22, 1945, Supplement map, Surface Formations of Oakland County.

Birmingham quadrangle. U.S. Topographical Maps. Denver CO: U.S. Geo. Survey, 1981

City of Royal Oak Cummingston Park. "A Treasury of Wild Flowers"

Drife, Donald. Personal Interview April 3, 2005

Hansen, Michael C. The History of Lake Erie Division of Geological Survey, http://www.ohiodnr.com/geosurvey/ last updated 12-30-1999

Larson, Joan. Telephone Interview April 3, 2002

McMahon, Daniel. Personal interview. March 23, 2005

Muller, Walter O. Telephone interview. Sept. 2004.

Royal Oak quadrangle. U.S. Topographical Maps. Denver CO: U.S. Geo. Survey

Safranoff, Ray. Telephone interview April 2002

Soil Survey of Oakland County, Michigan United States Department of Agriculture Soil Conservation Service with Michigan Agriculture Experiment Station, Issued March 1982

Topo of Cummingston Park, City of Royal Oak Engineering Department, Feb. 26, 1970

1916 Troy Township Tax Parcel Ownership Map, www.ci.troy.mi.us/gis/interactive.asp

August 4, 2005